

Trend Study 1-22-01

Study site name: Dake Pass.

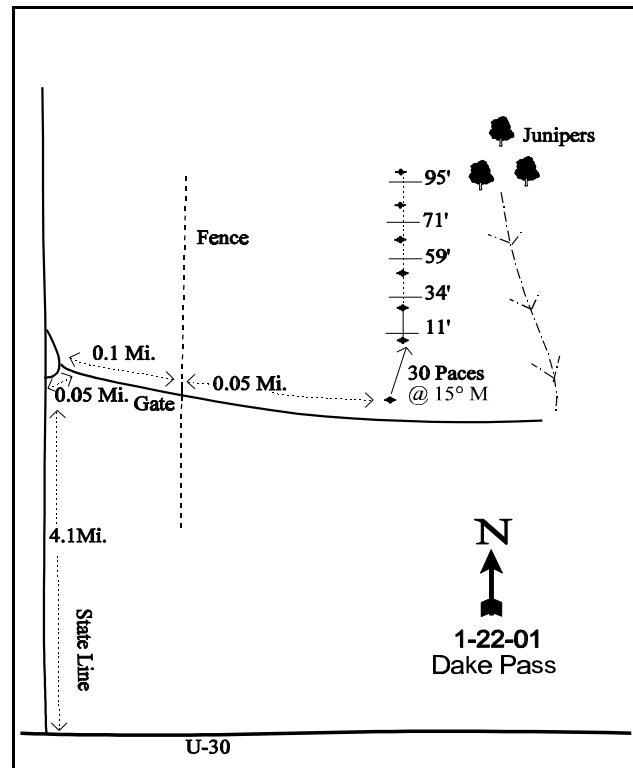
Vegetation type: Black Sagebrush.

Compass bearing: frequency baseline 0 degrees magnetic.

Frequency belt placement: line 1 (11ft), line 2 (34ft), line 3 (59ft), line 4 (71ft), line 5 (95ft).

## LOCATION DESCRIPTION

From U-30 at the Utah/Nevada state line, near mile marker 0, turn right and travel 4.1 miles to an intersection. Take a right at the intersection and travel 0.15 to a gate. From the gate drive 0.05 miles to a witness post on the left hand side of the road. From the witness post walk 30 paces at 15 degrees magnetic to the 0-foot baseline stake. The baseline runs 0 degrees magnetic.

Map Name: Jackson Spring

### Diagrammatic Sketch

Township 8N, Range 19W, Section 9UTM 4590307 N, 246104 E

## DISCUSSION

### Trend Study No. 1-22

The Dake Pass site samples a salt desert shrub community just west of the Nevada State line. The site is characterized by gentle low ridges dominated by black sagebrush and shallow drainage depressions with deeper soils and a relatively good association of grasses. Site aspect is to the south with a gentle 3% to 5% slope and an elevation of about 5,300 feet. This area is utilized by deer and elk as winter range. It is also reportedly an important sage grouse strutting area. A large number of sage grouse droppings were noted on the next ridge to the east in 2001. Deer and elk pellets were encountered when the transect was setup, but more appeared to be outside of the sampled area. Some coyote droppings were found along with sign of past livestock activity. This area is within the U & I allotment. It is grazed by 914 cattle from November 1 to March 31. A pellet-group transect read on site in 2001 estimated 19 elk days use/acre (46 elk days use/ha).

The soil is moderately shallow with an effective rooting depth of only 10 inches, light colored, with considerable surface rock and pavement cover. Soil texture is a clay loam with a moderately alkaline soil reaction (8.2 pH). Phosphorus could be a limiting factor at 9.3 ppm where values less than 10 ppm can limit normal plant growth and development. There are large open areas between individual shrubs, but little bare soil is exposed due to the abundance of pavement-rock cover (33%). The soil profile is rocky throughout, yet no hardpan was noted. Aside from the gradual movement of soil from the low ridges, there is no accelerated erosion occurring and the erosion condition class was determined as stable in 2001.

Black sagebrush dominates the site, but there are several associated and useful species that include: bud sagebrush, shadscale, winterfat, Nevada ephedra, and spiny hopsage. All provide additional forage for wintering big game. Black sagebrush provides more than half of the shrub cover with an estimated density of 7,580 plants/acre in 1996, and 8,360 plants/acre in 2001. Utilization was mostly moderate with 21% of the population displaying heavy use in 1996. Use was mostly light in 2001. Percent decadency has been moderate at 32% in 1996 and 27% in 2001. Currently, vigor is good on all but 45% of the decadent shrubs which were classified as dying. Recruitment is good with high numbers of young plants sampled in 2001. Annual leader growth was poor in 2001 averaging just over ½ of an inch (.63"). Annual leader growth for this site was 24% of the average for the unit which would suggest poor site potential of this site compared to the other black sagebrush sites within this unit.

Other preferred browse occur at much lower densities. The next most abundant shrub is Bud sagebrush which had an estimated density of 780 plants/acre in 2001. These plants measure, on average, only 6 inches in height with a 8 inch crown. This may be due to continued heavy use and competition with the dense population of black sagebrush. Currently, 18% of the population displays heavy use. Shadscale is relatively abundant with an estimated density of 3,480 plants/acre. The population appears to be stable with a proportion of only 1% seedlings and 23% young being inventoried. Utilization is light. Winterfat, Ephedra, and hopsage occur infrequently. Other, less desirable shrubs include narrowleaf low rabbitbrush, and two species of spiny horsebrush.

The herbaceous understory is not particularly abundant, yet is well developed for a salt desert shrub community. Grasses and forbs combined in 1996 to produce nearly 10% cover. In 2001, they combine again for nearly 10% cover, however forb cover decreased while grass cover compensated for these losses. Grasses initially made up 62% of the herbaceous cover, now they contribute to 91% of the herbaceous cover. Common grasses consist of Sandberg bluegrass, bottlebrush squirreltail, and Indian ricegrass. Forbs are diverse, however most have low forage value. Hoods phlox dominates the forb component by providing about 67% of the forb cover.

## 1996 APPARENT TREND ASSESSMENT

Some inevitable soil movement is occurring on the low ridges, but little bare soil is exposed due to the abundant pavement and rock cover (33%). No active gullies are present and accelerated erosion is not occurring. The key browse is black sagebrush. It appears to have a stable population with a moderate percent decadency of 33%, yet the majority of the plants have good vigor with more than adequate numbers of seedlings and young. The other preferred browse species also appear to have stable populations. The herbaceous understory is fairly well developed for a salt desert shrub community. Forbs are, however, dominated by low value species.

## 2001 TREND ASSESSMENT

Some inevitable soil movement continues to occur on the low ridges, but bare soil has increased due mostly to the losses in litter cover. Abundant pavement-rock cover remains almost unchanged (33%). No active gullies are present and accelerated erosion is not occurring. However, the ratio of bare soil to protective cover has decreased significantly. With these changes, trend for soil is slightly down at this time. The key browse is black sagebrush. It appears to have a stable population even with the 9% increase in its population. This is offset by moderately high decadence (27%) and with the increase in decadent classified as dying going from 520 plants/acre to 1,060 plants/acre. There are adequate numbers of young within the population to replace these individuals. The other preferred browse species, which are a minor component of the browse population, also appear to fairly stable populations. The herbaceous understory is relatively well developed for a salt desert shrub community. Forbs are, however, dominated by low value species. The herbaceous understory is considered stable.

### TREND ASSESSMENT

soil - slightly down (2)

browse - stable (3)

herbaceous understory - stable (3)

### HERBACEOUS TRENDS --

Herd unit 01 , Study no: 22

Type	Species	Nested Frequency		Quadrat Frequency		Average Cover %	
		'96	'01	'96	'01	'96	'01
G	Bromus tectorum (a)	27	*51	8	16	.04	.20
G	Oryzopsis hymenoides	49	63	18	25	.64	2.33
G	Poa secunda	136	118	49	45	2.87	2.54
G	Sitanion hystrix	129	126	55	46	2.46	3.64
Total for Annual Grasses		27	51	8	16	0.04	0.20
Total for Perennial Grasses		314	307	122	116	5.98	8.52
Total for Grasses		341	358	130	132	6.02	8.72
F	Agoseris glauca	3	-	1	-	.00	-
F	Arabis spp.	10	*-	5	-	.02	-
F	Astragalus utahensis	12	*-	6	-	.03	-
F	Collinsia parviflora (a)	14	-	4	-	.02	-

T y p e	Species	Nested Frequency		Quadrat Frequency		Average Cover %	
		'96	'01	'96	'01	'96	'01
F	Cruciferae	4	-	2	-	.38	-
F	Cryptantha spp.	33	*-	12	-	.42	-
F	Cymopterus spp.	-	1	-	1	-	.00
F	Descurainia pinnata (a)	2	*15	1	8	.00	.04
F	Eriogonum ovalifolium	1	-	1	-	.00	-
F	Erigeron pumilus	2	-	1	-	.00	-
F	Gilia spp. (a)	5	3	3	1	.01	.00
F	Halogeton glomeratus (a)	1	-	1	-	.00	-
F	Lappula occidentalis (a)	15	4	5	3	.05	.01
F	Melilotus alba	6	-	2	-	.03	-
F	Navarretia intertexta (a)	7	-	3	-	.01	-
F	Phlox hoodii	107	*50	36	20	2.47	.55
F	Phlox longifolia	27	*51	15	24	.15	.22
F	Sphaeralcea grossulariaefolia	1	1	1	1	.03	.00
F	Townsendia spp.	3	-	3	-	.01	-
Total for Annual Forbs		44	22	17	12	0.10	0.05
Total for Perennial Forbs		209	103	85	46	3.59	0.78
Total for Forbs		253	125	102	58	3.70	0.84

\* Indicates significant difference at alpha = 0.10 (annuals excluded)

## BROWSE TRENDS --

Herd unit 01 , Study no: 22

Type	Species	Strip Frequency		Average Cover %	
		'96	'01	'96	'01
B	Artemisia nova	87	92	14.13	13.55
B	Artemisia spinescens	19	15	.55	.19
B	Atriplex confertifolia	56	53	4.50	2.28
B	Ceratoides lanata	3	13	.03	.27
B	Chrysothamnus viscidiflorus stenophyllus	35	39	1.76	1.27
B	Ephedra nevadensis	9	8	.21	.64
B	Grayia spinosa	10	9	2.70	2.33
B	Kochia americana	17	0	.75	-
B	Pediocactus simpsonii	3	2	.00	.00
B	Tetradymia nuttallii	4	2	.30	.06
B	Tetradymia spinosa	1	0	-	-
Total for Browse		244	233	24.95	20.63

## BASIC COVER --

Herd unit 01 , Study no: 22

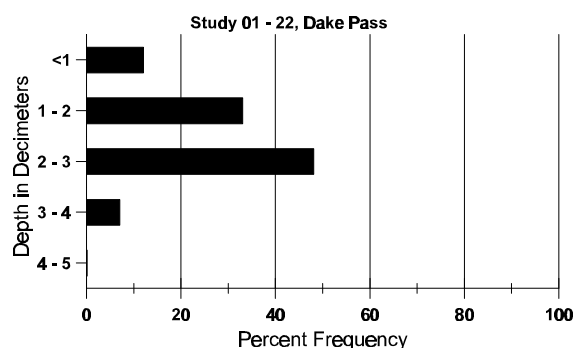
Cover Type	Nested Frequency		Average Cover %	
	'96	'01	'96	'01
Vegetation	385	338	33.97	32.38
Rock	278	198	5.53	2.96
Pavement	427	437	27.12	30.03
Litter	479	401	33.09	17.84
Cryptogams	223	255	2.29	3.89
Bare Ground	248	341	4.20	17.40

## SOIL ANALYSIS DATA --

Herd Unit 01, Study no: 22, Dake Pass

Effective rooting depth (in)	Temp °F (depth)	PH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
10.2	60.8 (10.6)	8.2	42.7	28.0	29.3	1.8	9.3	380.8	.8

## Stoniness Index



### PELLET GROUP FREQUENCY --

Herd unit 01 , Study no: 22

Type	Quadrat Frequency		Pellet Transect	
			Pellet Groups per Acre	Days Use per Acre (ha)
	'96	'01	'01	'01
Elk	1	9	244	19 (46)
Deer	1	-	-	-

### BROWSE CHARACTERISTICS --

Herd unit 01 , Study no: 22

A Y G R E		Form Class (No. of Plants)										Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4					
Artemisia nova																			
S	96	276	-	-	7	-	-	-	-	-	283	-	-	-	5660			283	
	01	18	-	-	-	-	-	-	-	-	18	-	-	-	360			18	
Y	96	27	13	-	-	-	-	-	-	-	40	-	-	-	800			40	
	01	63	-	-	-	-	-	1	-	-	64	-	-	-	1280			64	
M	96	46	139	28	2	-	-	-	-	-	215	-	-	-	4300	11	23	215	
	01	223	-	-	10	7	-	-	-	-	234	6	-	-	4800	9	18	240	
D	96	15	55	51	2	1	-	-	-	-	98	-	-	26	2480			124	
	01	86	-	4	17	3	-	4	-	-	63	-	-	51	2280			114	
X	96	-	-	-	-	-	-	-	-	-	-	-	-	-	1720			86	
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	1620			81	
% Plants Showing		<u>Moderate Use</u>				<u>Heavy Use</u>				<u>Poor Vigor</u>				<u>%Change</u>					
'96		55%				21%				07%				+ 9%					
'01		02%				.95%				12%									
Total Plants/Acre (excluding Dead & Seedlings)														'96	7580	Dec:	33%		
														'01	8360		27%		

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Artemisia spinescens																		
S	96 01	1 -	- -	- -	- -	- -	- -	- -	- -	- -	1 -	- -	- -	- -	20 0		1 0	
Y	96 01	12 3	- -	1 -	- -	- -	- -	- -	- -	- -	13 3	- -	- -	- -	260 60		13 3	
M	96 01	17 17	6 2	4 -	- 3	- 2	- -	- -	- -	- -	26 24	- -	1 -	- -	540 480	5 6	13 8	27 24
D	96 01	5 3	- 1	6 2	1 1	- -	2 5	- -	- -	- -	3 5	- -	1 -	10 7	280 240		14 12	
X	96 01	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	20 60		1 3	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'96		11%			24%			22%			-28%							
'01		13%			18%			18%										
Total Plants/Acre (excluding Dead & Seedlings)														'96	1080	Dec:	26%	
														'01	780		31%	
Atriplex confertifolia																		
S	96 01	82 1	- -	- -	1 -	- -	- -	- -	- -	- -	83 1	- -	- -	- -	1660 20		83 1	
Y	96 01	61 25	- -	5 -	4 14	- -	- -	- 1	- -	- -	70 40	- -	- -	- -	1400 800		70 40	
M	96 01	113 33	11 -	7 -	11 70	- -	- -	- 2	- -	- -	140 105	- -	- -	2 -	2840 2100	9 7	15 12	142 105
D	96 01	17 16	5 -	6 -	- 13	- -	- -	- -	- -	- -	23 21	1 -	- -	4 8	560 580		28 29	
X	96 01	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	260 320		13 16	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'96		07%			08%			03%			-28%							
'01		00%			00%			05%										
Total Plants/Acre (excluding Dead & Seedlings)														'96	4800	Dec:	12%	
														'01	3480		17%	

A G R E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Ceratoides lanata																		
S	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	01	1	-	-	-	-	-	-	-	-	-	-	-	-	20		1	
Y	96	-	-	1	-	-	-	-	-	-	1	-	-	-	20		1	
	01	9	-	-	-	-	-	-	-	-	9	-	-	-	180		9	
M	96	-	-	1	1	-	-	-	-	-	1	1	-	-	40	7 12	2	
	01	24	-	-	-	1	-	-	-	-	25	-	-	-	500	5 8	25	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'96		00%			67%			00%			+91%							
'01		03%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'96	60	Dec:	-			
												'01	680		-			
Chrysothamnus viscidiflorus stenophyllus																		
S	96	12	-	-	8	-	-	-	-	-	20	-	-	-	400		20	
	01	2	-	-	-	-	-	-	-	-	2	-	-	-	40		2	
Y	96	-	2	-	-	-	-	-	-	-	2	-	-	-	40		2	
	01	7	-	-	1	-	-	-	-	-	8	-	-	-	160		8	
M	96	49	-	-	1	-	-	-	-	-	49	-	1	-	1000	10 16	50	
	01	36	-	-	8	-	-	1	-	-	45	-	-	-	900	9 16	45	
D	96	2	2	-	-	-	-	-	-	-	4	-	-	-	80		4	
	01	7	-	-	2	-	-	-	-	-	4	-	-	5	180		9	
X	96	-	-	-	-	-	-	-	-	-	-	-	-	-	20		1	
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'96		07%			00%			02%			+10%							
'01		00%			00%			08%										
Total Plants/Acre (excluding Dead & Seedlings)												'96	1120	Dec:	7%			
												'01	1240		15%			
Ephedra nevadensis																		
Y	96	1	-	-	2	-	-	-	-	-	3	-	-	-	60		3	
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
M	96	2	3	5	-	1	-	-	-	-	11	-	-	-	220	18 29	11	
	01	-	2	2	-	2	-	-	-	-	6	-	-	-	120	15 25	6	
D	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	01	-	-	2	-	-	-	-	-	-	2	-	-	-	40		2	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'96		29%			36%			00%			-43%							
'01		50%			50%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'96	280	Dec:	0%			
												'01	160		25%			



A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Grayia spinosa																		
M	96	8	2	-	-	-	-	-	-	-	7	-	3	-	200	23	34	10
	01	4	-	-	9	-	-	1	-	-	14	-	-	-	280	16	25	14
D	96	2	-	1	-	-	-	-	-	-	2	-	-	1	60			3
	01	-	-	-	2	-	-	3	-	-	5	-	-	-	100			5
X	96	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'96		15%			08%			31%			+32%							
'01		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)														'96	260	Dec:	23%	
														'01	380		26%	
Kochia americana																		
S	96	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	96	3	-	-	-	-	-	-	-	-	3	-	-	-	60			3
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	96	55	9	-	-	-	-	-	-	-	64	-	-	-	1280	6	11	64
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
D	96	1	-	-	-	-	-	-	-	-	-	-	-	1	20			1
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'96		13%			00%			01%										
'01		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)														'96	1360	Dec:	1%	
														'01	0		0%	
Opuntia spp.																		
M	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0	4	13	0
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0	5	10	0
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'96		00%			00%			00%										
'01		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)														'96	0	Dec:	-	
														'01	0		-	

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Pediocactus simpsonii																		
M	96	3	-	-	-	-	-	-	-	-	3	-	-	-	60	0	2	3
	01	-	-	-	-	-	-	2	-	-	2	-	-	-	40	1	2	2
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'96		00%			00%			00%			-33%							
'01		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'96	60	Dec:	-			
												'01	40		-			
Tetradymia nuttallii																		
M	96	2	-	-	-	-	-	-	-	-	2	-	-	-	40	15	19	2
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0	11	12	0
D	96	2	-	-	-	-	-	-	-	-	1	-	-	1	40			2
	01	1	-	-	1	-	-	-	-	-	-	-	-	2	40			2
X	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	60			3
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'96		00%			00%			25%			-50%							
'01		00%			00%			100%										
Total Plants/Acre (excluding Dead & Seedlings)												'96	80	Dec:	50%			
												'01	40		100%			
Tetradymia spinosa																		
Y	96	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	96	1	-	-	-	-	-	-	-	-	1	-	-	-	20	6	11	1
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'96		00%			00%			00%										
'01		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'96	60	Dec:	-			
												'01	0		-			